

Central Florida Invasive Mammals

Cause Harm

- Invasive species is an umbrella term referring to alien, exotic, non-indigenous, and non-native species.
- *Invasive species are those that are not native to the ecosystem under consideration and that cause or are likely to cause economic or environmental harm or harm to human, animal, or plant health.*
- Environmental harm means biologically significant decreases in native species populations, alterations to plant and animal communities or to ecological processes that native species and other desirable plants and animals and humans depend on for survival. Environmental harm may be a result of direct effects of *invasive species, leading to biologically significant decreases in native species populations.*
- It is also essential to recognize that *invasive species are not those under human control or domestication; that is, invasive species are not those that humans depend upon for economic security, maintaining a desirable quality of life, or survival.*

Non Native Invasive Mammals

- House Mouse *Mus musculus*
- Black Rat *Rattus rattus*
- Norway Rat *Rattus norvegicus*
- Nine-Banded Armadillo *Dasybus novemcinctus*
- Red Fox *Vulpes vulpes*
- Coyote *Canis Latrans*
- Domestic Cat *Felis catus*
- Domestic Dog *Canus familiaris*
- Wild Pig *Sus scrofa*

House Mouse



Do a lot of structural , agricultural damage.

Color- white to gray, and light brown to black, short hair and a light belly

Ears and tail have little color

Mice are primarily active at dusk or night

Gestation period 19-21 days, average 6-8 young, can live up to 2-3 years

Live in proximity to humans.

Can transmit diseases which are transmitted to man (Tularemia, Typhus, and Bubonic plague).

Black Rat or Roof Rat



Twelve to 14 inches long, the tail is longer than the body (hairless and scaly). The body is sleek with prominent ears and eyes. There are three color phases. The worst rodent pest in Florida and most abundant. Gestation period 21-23 days, 5-8 young, can have 4-5 litters per year. Very secretive and nocturnal. They consume animal and human food stores, chew through wires, gnaw through plastic and lead water pipes and cause structural damage to buildings. Arboreal and very fond of fruit, especially citrus, creating damage to fruit they consume. Black rats and their eco parasites can carry numerous diseases that can be transmitted to man such as the plague.

Norway Rat



Norway and black rats are claimed to have caused more death than all the wars in history. Rare in Florida, fur is coarse, brownish or reddish gray and slightly larger than a roof rat, up to 1 pound.

Live in close association to people.

Nocturnal, have poor eye sight but a great sense of smell.

Gestation period 21-23 days

Litters of 6-12, mature at 3 months

Great gnawers and may transmit diseases to man and livestock such as murine typhus, leptospirosis, trichinosis, and salmonellosis.

Nine-Banded Armadillo



Named for the nine breaks in its leathery armor and about the same size as a house cat. Breeding occurs in the summer months but implantation is delayed until the fall. The gestation period is 120 days and give birth to four identical young.

Occurs almost through out Florida. They like forested to open habitats which have loose textured soil which allows them to dig easily.

Consume many types of insects, some plants and invertebrates through rooting and live in burrows. Beetles are their primary food source.

Weigh up to 17 pounds.

They can modify gopher tortoise burrows and have been known to disturb ground nests.

Red Fox



Color-red in color. The tail is black, tipped in white. Weighs 10-15 pounds. Gestation period 53 days. Have an average of 5 pups. Generally nocturnal, and usually avoids heavily wooded areas. Often found in suburban areas. They sometimes enlarge burrows of gopher tortoise and armadillo. Burrows can be 20-30 feet long and 3-4 deep. Prey items consist of small mammals such as rabbits mice and rats. Subject to epizootics of rabies which has not been a serious problem in Florida because of their population numbers. Control in Florida is limited due to current rules and regulations protecting this species.

Coyote



Color –pelts are usually grayish-brown, weigh between 20-30 pounds. Have occurred in Florida since the 1970's. Their numbers are increasing state wide. Can be found in almost any type of habitat and also live in urban area. Gestation period 63 days, can breed at 10 months old. Breeding with domestic dogs but is very infrequent in the wild. An average of 6 pups are born per litter. Home range can vary between 1,500 to 12,000 acres. Coyotes generally hunt alone but can hunt in a pair. Social animals. Feed on rodents, rabbits, lizards, snakes, insects, grasses, watermelon, fish and carrion. They can be a major predator on fawns and turkey poults and live stock especially calves but not all coyotes kill livestock. They also have been known to kill domestic pets. Coyotes are also known to prey and displace small predator species such as bobcats, red and gray fox.

Feral cats



There are approximately 5.3 million free-ranging cats in Florida. Most live in feral colonies or are closely associated with residential areas.

Domesticated free ranging cats are the primary cause of bird death in the U. S. Responsible for the decreased numbers numerous species. Feed extensively on songbirds (scrub jays), mice, and other rodents, rabbits and wildlife. Lower the food source of other wildlife species.

Can produce 3 litters per year.

Reservoirs for numerous human and wildlife diseases including cat scratch fever, distemper, histoplasmosis, leptospirosis, mumps, rabies, ringworm, salmonellosis, and toxoplasmosis.

Feral, Free Ranging Dogs



In most cases feral dogs are not distinguishable from domestic dogs. Feral dogs survive and reproduce independently of human intervention or assistance. Wildlife, livestock, amphibians, reptiles and birds can fall victim to free ranging dogs. Packs of wild dogs often occur in forested areas in close proximity to small towns. There are numerous zoonoses that can be transmitted to man such as rabies, infections from bites, Toxocariasis and salmonellosis. Most communities will not tolerate packs of dogs and control these populations once they are found.

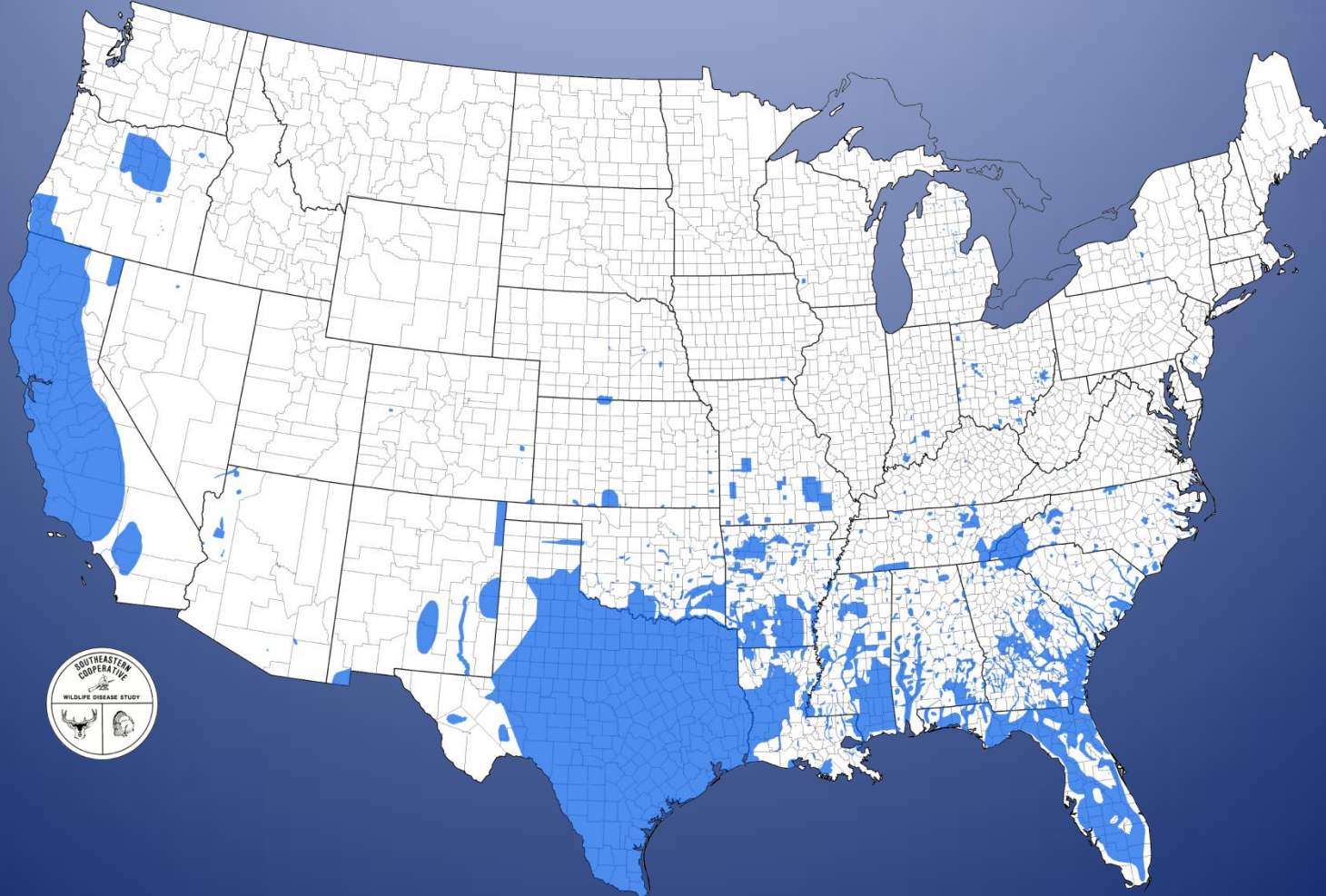
Wild Pigs

Wild pigs are by far the most conspicuous and destructive exotic animal species found throughout Florida conservation lands. The species' ability to readily adapt to a wide variety of Florida habitats, combined with high reproductive rates and a lack of significant natural predators has led to unacceptably high population densities on many of these lands. Although recreational hunting of feral swine is popular in some areas, the harvest is not sufficient to ablate concerns relating to ecological damage and significant economic costs associated with agricultural damage (Seward et al. 2004, Engeman, et al. 2003, 2004 and 2007). Moreover, feral swine pose a significant threat of disease transmission to native wildlife, domestic livestock and humans. Feral swine are known reservoirs for both brucellosis and pseudorabies (Conger et al., 1999, Wheeler, 1999). Humans are susceptible to swine brucellosis, putting persons who come in contact with feral swine at risk. Pseudorabies is a highly contagious herpes viral disease which occurs in swine. Once swine are infected with this virus they will remain infected for the rest of their lives, although they may not show clinical signs of the disease. Swine infected with pseudorabies are capable of transmitting the disease to other species including cattle, sheep, goats, horses, dogs and cats. Pseudorabies infections in these secondary species are usually fatal.

Current strategies for management of wildlife diseases recognize the impact of population density on the potential for ecological and agricultural damage, as well as for disease transmission (Gotazar et al. 2006, Lloyd-Smith et al. 2005). In addition to hunting, efforts to reduce feral swine populations typically have involved trapping and removal or euthanasia. Capture of feral swine requires experienced trappers which can be costly and time consuming. Although some successes may be achieved by this method (Hone and Pedersen 1980, Engeman et al. 2001) the reduction in population and damage is only temporary. One modeling study suggested that if a feral swine population was reduced by 95% it would be able to return to the original population density in less than 5 years (Dzieciolowski et al. 1992). The potential disadvantages of removing significant numbers of animals from an area by culling have been noted (Tuyttens and MacDonald, 1998, Tuyttens et al, 2000, Donnelly et al., 2006, Woodroffe et al., 2007). Depopulation by lethal means may result in a “vacuum” effect where territorial boundaries are no longer defended allowing for influx of new animals to the area. Moreover, populations greatly reduced by culling are likely to rebound quickly. As territorial boundaries are defined by the new population, interactions will likely increase among individuals in the population that may increase disease transmission.



Wild Pig Range Expansion



Biology and Natural History

- Wild pigs are perhaps the most fertile large mammal on earth.
- Feral hogs become reproductively active at 20 to 51 weeks of age and can produce up to 2 litters per year.
- Gestation period is around 116 days.
- Litter sizes range from 3-8.
- Piglets are weaned at 3 months.
- Wild pigs travel in large family groups called sounders which consist of several adult females and multiple juveniles.

Types of Ecological Damage

Impacts to ecosystems by rooting can take the form of decreased water quality, increased propagation of exotic plant species, increased soil erosion, modification of nutrient cycles, and damage to native plant species (Patten 1974, Singer et al. 1984, Stone and Keith 1987, Cushman et al. 2004, Kaller and Kelso 2006).

Wild pigs are perhaps the greatest vertebrate modifiers of natural plant communities (Bratton 1977, Wood and Barrett 1979, Stone and Keith 1987). Rooting, trampling, and compaction influence plant regeneration, community structure, soil properties, nutrient cycling, and water infiltration (Seward et al. 2004).

In Florida, wild pigs contributed to the decline of at least 22 plant species and 4 amphibian species listed as rare, threatened, endangered, or of special concern (USDA 2002).

Pigs can cause problems for native wildlife by competition for resources, direct predation, and the spread of disease and parasites (Hanson and Karstad 1959, Sweeney et al. 2003). Wild pigs may compete with native wildlife for hard and soft mast and many other important food items (Belden and Frankenberger 1989, Yarrow and Kroll 1989).

Monitor

- 1) Observational Damage Surveys
- 2) Track plots
- 3) Wetland Damage Assessments
- 4) Bait Stations
- 5) Trail Cameras
- 6) Incidence of Blood Borne Diseases
- 7) Wild Pig Weights
- 8) Age Structure
- 9) GPS and GIS Mapping and Interpretation of Data

Wetland Damage Assessment Lower Hillsborough

Legend

- Impact_Units
- AccessPoints_Gates
- LndMgtGates
- Trap_Site_Data
- Hog_removal
- RecreationalTrails
- LandManagementRoads
- Track_Plots
- Wetland_Boundary
- SWFWMD Acquired Fee
- SWFWMD Acquired Less than Fee
- SWFWMD Acquired Perpetual Easement
- 2010 Natural Color Imagery



Sport hunting usually has little effect on the size of wild pig populations.

Control of wild pig populations might be only feasible to sensitive sites.

Methods of control

- Hunting; dog and still hunts
- Trapping
- Snaring
- Aerial gunning
- Night shooting
- Judas Pigs
- Toxicants
- Fencing
- Harassment
- Contraception



Summary

- Maximize the effectiveness of all available control tactics.
- Monitor key performance metrics to track success.
- Manage risk.
- Develop new tactics and adapt as needed.
- Develop a state wide feral pig management policy.